LAMBDA-POINT EXPERIMENT HELIUM CRYOSTAT, CRYO-SERVICING, FUNCTIONS, AND PERFORMANCE, * D. Petrac, U. E. Israelsson and T. S. Luchik, Jet Propulsion Laboratory, Pasadena, California, 91109-8099. The **Lambda-Point Experiment** (LPE) **flew on the first** USMP-1 **(US** Microgravity **Payload) mission on Space Shuttle Columbia. The launch occurred on Ott 22, 1992. The goal of the experiment was to measure the singularity in the specific heat of helium around the lambda transition at 2,177K and with** nanoKelvin **resolution. The instrument was developed by Professor** J. **Lipa and his team at Stanford University under a contract with Ball Aerospace in Colorado. The Jet Propulsion Laboratory** (JPL) **provided management of the experiment and the cryostat facility. The cryogenic system, functions and performance are described in detail.** Before **flight over 100** cryo-servicing **operations, covering a 20 month period from the first cool-down, were performed, The cryostat's performance in space exceeded expectations primarily due to the lower outside shell temperature, The temperature stability of the cryostat was maintained** by **passive control with a liquid vapor phase separator,**

***Acknowledgement:** The **work described in this paper was carried out by the Jet F'repulsion Laboratory, California Institute of Technology under contract with NASA. Support from numerous personnel at** JPL, **Kennedy Space Center, Marshall Space Flight Center, Johnson Space Center and NASA/HO is acknowledged.**

1. **CEC**
2. **D.** Petrac, **M/S 125-214**
Jet Propulsion Laboratory
4800 Oak Grove Drive
Pasadena, CA 91109-8099
Ph: (818) 354-3026
FAX:(818) **393-4878**
3. **D. Petrac, U. E.** Israelsson, **7-. S.** Luchik
4. **Key words: Cryostat, helium, space shuttle**
5. **Preference: Oral Session**